ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 1999

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DB99

COST (*In Thousands*)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DB99 Advanced Tank Armament System	8485	8867	1937	8870	8860	8856	8843	8830	Continuing	Continuing

A. Mission Description and Budget Item Justification: The goal of the Advanced Tank Armament System (ATAS) program is to assure lethality superiority over increasingly more capable future enemy tanks. ATAS is developing and demonstrating key gun and fire control technologies. When combined with on-going ammunition developments, ATAS will provide leap-ahead lethality improvements for the current tank fleet, the Future Scout and Cavalry System, the next upgrade to the M1A2 Abrams tank, and other weapon system platforms.

The ATAS Program has two main phases. Phase I develops and demonstrates, in FY99, autotarget tracking technology that is applicable to the current M1 Abrams series of tanks. Phase I is a requirements oriented, Combat Developer [User] directed program that increases the tank crew's ability to quickly kill enemy battlefield targets. Phase I technology, when applied to tank training devices, will also reduce tank crew training costs by reducing the amount of training necessary for new gunners to perform proficiently. Phase II demonstrates a longer 120mm tank main gun that is more lethal and can kill advanced enemy tanks at extended ranges. It also develops advanced fire control components to consistently and accurately hit longer range targets. This gun and fire control system technology is now being applied in medium caliber to the Future Scout and Cavalry System to reduce the overall cost of Army weapon system development. It can also be applied to the Future Combat System in both large and medium gun calibers to reduce overall cost of Army weapon system development. An Electronic Muzzle Reference Sensor (EMRS) being developed in this phase eliminates a radioactive tritium light source from the Abrams MRS (Muzzle Reference Sensor). The Army is evaluating the L55 German gun, which was recently developed for an upgrade to the German main battle tank - the LEO2A5. Due to the cannon design commonality of the German LEO2A5 and the Abrams M1A2, the L55 gun tube can be mounted on the Abrams with minimum hardware and software changes. The L55 is fully developed and tested. US adaptation of this German gun should significantly reduce US RDT&E and procurement costs for the development and fielding of a long barrel 120mm gun. The US version of the L55 gun will be called the M256E1. Fire control technology developed under this program will be adapted to insure that the performance of the German L55 meets US requirements. The L55/M256E1 gun tube evaluation will begin in FY99. An M1A2 demonstration (L55/M256E1 gun barrel in an M1A2 tank) in FY01 will evaluate the overall system performance and assess integration costs.

In FY02 and beyond, the ATAS Program will demonstrate and test in an Abrams tank emerging gun and fire control system technology which promise life cycle cost reduction. This technology includes tantalum coatings, modern servo-control systems, and an improved MRS. Life cycle cost reduction will be achieved through the techniques of Modernization Through Spares, Value Engineering Change Proposals, and O&S cost reductions.

FY 1998 Accomplishments:

•	200	Phase I - completed laboratory testing
•	82	Phase II - completed coating development
•	2422	Phase II - fabricated long gun prototype hardware & subsystem testing
•	2781	Phase II – began design & fabrication of the stabilization/Fire Control System
•	3000	Phase II - began turret modification design
Total	8485	

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FY 1999 Planned Program:

- 2600 Phase II - complete long gun hardware fabrication & testing
- 2500 Phase II - complete stabilization/fire control system component fabrication & test
- 2000 Phase II - continue turret integration
- 1540 Phase II - demonstration & test
- 227 Small Business Innovative Research/Small Business Technology Transfer Program

Total 8867

FY 2000 Planned Program:

- 775 Phase II - begin L55/ M256E1gun barrels & mounting hardware testing
- 503 Phase II - begin L55/M256E1 hardware & software modifications testing
- 659 Phase II - begin L55/ M25E1 tank integration

Total 1937

FY 2001 Planned Program:

- 2200 Phase II - completeL55/M256E1 gun barrel testing
- 3400 Phase II- complete L55/M256E1 hardware & software integration
- 3270 Phase II - complete L55/M256E1 M1A2 demonstration

Total 8870

B. Program Change Summary	FY 1998	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 1999 PB)	8704	8928	0	0
Appropriated Value	8982	8928		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-278	-61		
b. SBIR / STTR	-165			
c. Omnibus or Other Above Threshold Reductions	-54			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+1937	+8870
Current Budget Submit (FY 2000 / 2001 PB)	8485	8867	1937	8870

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Change Summary Explanation: FY 2000/2001 funding increase to support continued demonstration efforts to improve the cannon and associated fire control (particularly the German L55 Cannon) for potential implementation either through Engineering Change Proposal (ECP), Modernization Through Spares (MTS) and/or Operation and Support Cost Reduction (OSCR).

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: The technologies in ATAS will be demonstrated then transferred to PM Abrams, PM-FSCS and other weapon platform PMs for further technological development. Technologies in ATAS may flow into the next major upgrade or Engineering Change Proposal (ECP) to the current Abrams tank. Several contractors and government agencies are used to develop or integrate existing technologies.

E. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete Gun Tube Coating Effort	4Q*							
Complete Autotracker Demonstration	4Q	2Q						
Begin 120mm Long Gun hardware Fab	2Q*							
Begin design/fabricate Stabilization/Fire Control	2Q*							
Begin turret modification design	4Q*							
Complete gun/fire control system fabrication								
Continue turret modification design		1Q*						
Component demonstration & test		4Q						
Procure L55 gun barrels		3Q						
Fabricate M256E1 gun barrels		4Q						
Begin L55/M256E1 gun barrel testing			1Q					
Begin L55/M256E1 hardware & software testing			2Q					
Begin L55/M256E1 tank integration			3Q					
Complete L55/M256E1 gun barrel testing				1Q				
Complete L55/M256E1 hardware and software testing				1Q				
Complete L55/M256E1 tank integration				2Q				
Begin L55/M256E1 tank testing				3Q				
Complete L55/M256E1 tank testing				4Q				
Begin coating & straightening application					1Q			
Complete coating & straightening application					4Q			
Begin coating & straightening test						2Q		
Complete coating & straightening test						4Q		

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E. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Begin MRS & modern servo application							1Q	
Complete MRS & modern servo application								2Q
Begin vehicle test								3Q
Complete vehicle test								4Q

*Completed milestone

ARMY RDT&E COST ANALYSIS (R-3)

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. M256E1	MIPR	Benet Labs, Watervliet, NY Gov	5686	1600		500		1725		Cont	Cont	
b. L55 Gun Tubes	SS & FP	Rheinmetall, Ratingen, GE		750	DEC1998			475		Cont	Cont	
c. M1A2 Integration	SS & CPFF	GDLS, Sterling Heights, MI	1970	2000		500				Cont	Cont	
d. Fire Control Development	CPFF	Raytheon (TI) Systems, Dallas, Texas	16826	2500				2250		Cont	Cont	
e. Fire Control Development	MIPR	ARDEC, Picatinny Arsenal, NJ		335		337		120		Cont	Cont	
f. EMRS	MIPR	ARDEC, Picatinny Arsenal, NJ	457	200								
g. ATT	MIPR		271									
h. Misc	MIPR		652	197								
Subtotal Product Development:			25862	7582		1337		4570		Cont	Cont	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATT	MIPR	ATC, APG, MD	200	200								
b. M256E1 & L55 Testing				500		400		3500				
Subtotal Support Costs:			200	700		400		3500		Cont	Cont	

III. Test and Evaluation: Not applicable

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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management	MIPR	PM-TMAS	535	358		200		800		Cont	Cont	
b. SBIR/STTR				227								
Subtotal Management Services:			535	585		200		800		Cont	Cont	
Project Total Cost:			26597	8867		1937		8870		Cont	Cont	